St. Johns River-to-Sea Bike Loop: Survey of May Flowering Species

Final Report
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Investigators

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Introduction

The St. Johns River-to-Sea Bike Loop traverses about 260 miles along a route from East Palatka to St. Augustine, then to Melbourne, then west to the St Johns River, and finally north to East Palatka. Most of the loop is along roads, with about 40 miles of paved and unpaved bike paths. The plan is for this loop to be completed and become a wildflower trail in time for Florida's quincentennial in 2013.

The first step in accomplishing the latter objective is to determine existing and potential wildflower sites along the bike loop. Spring and fall are the two major seasons for showy wildflower displays in Florida.

Methods

A survey of mid- to late spring flowering native wildflower species was conducted on May 13-14, 2009. We followed the bike loop "Cue Sheets" (provided to us by Hope Howland-Cook of Bike Florida [http://www.bikeflorida.org]) used for Bike Florida's Inaugural Tour of the loop in 2008 (http://www.bikeflorida.org/fall_event.html).

The majority of the survey was conducted by car. At Lake Beresford Park and Gemini Springs, Volusia County graciously provided off-road, motorized vehicles to survey the paved, off-road trails. We also hiked some other off-road portions of the trail, both paved and undeveloped portions.

The segment of the future trail along the old railroad bed from Titusville to Maytown was not entirely surveyed. We did not survey the entire portion because the local expert knowledgeable about this portion of the trail was not available, the trail along this part of the route is about 3 years from being paved, and apparent land boundary disputes raised safety concerns. We were strongly cautioned about surveying portions of this segment of the trail because of what was described as actions that might be taken against us in regards to "property rights issues". However, we did examine portions of this segment where it crossed roads and allowed us to hike a short distance each way, and in one case, a site that was very close to Maytown Road in Volusia County. We felt this approach provided us with an adequate overview of what to expect along portions of the trail we did not observe. However, we are interested in returning to this segment for a more complete survey once ownership disputes are resolved.

Based on the Cue Sheets, we documented four types of sites (Enhancement, View only, New planting, and Do not develop) based on our consensus opinion and knowledge about native and nonnative plant species. All species are referred to by scientific name. Common names of all species mentioned in this report are listed in Table 1 (page 35).

- Site has existing showy native wildflower or grass species that are flowering
  - **Enhancement** – Has (or has the potential to be) substantial, aesthetically pleasing impact, and if managed appropriately, the existing native wildflower species should be sustainable, and the extent of species will probably expand.
  - **View only** – Three sites on Merritt Island National Wildlife Refuge; sites are managed by the Refuge

- **New planting** – Site is suitable for establishing a native wildflower planting that would have substantial, aesthetically pleasing impact.

- **Do not develop** – Sites to avoid developing into or establishing as a native wildflower site because of
  - The presence of nonnative, invasive species. [NOTE: We did not record all occurrences of invasive, nonnative species. We focused mainly on sites that would have had potential as new wildflower sites but were excluded because of invasive, nonnative species.]
  - The presence of subcanopy adjacent to mowed strips on each side of pavement along paved off-road portions of the trail.

For all sites we recorded habitat, GPS coordinates (accurate to 5 m or less), at least one digital image, and a general management recommendation. For new planting sites, we provided a list of commercially available, showy native wildflower and grass species suitable for site conditions and that are consistent with the 'sense of place' concept. The suggested species were available (as of June 3, 2009) as seeds or containerized plants based on information on the Florida wildflower seed producers' co-op web site (http://www.floridawildflowers.com) and the Association of Florida Native Nurseries web site (http://www.afnn.org).

In addition, ESRI-compliant shape files were generated as was an accompanying Excel spreadsheet for site information.

- Data fields (attributes) for site, site description, species, latitude, longitude, county, habitat notes, and recommendations.

- Data formatted to provide for efficient upload into any relational database management system and may be easily imported into any standard GIS platform.

- Datum (WGS84) and projection are stated; projection file (*.prj) with each shape file suite.

And finally, we sought anecdotal information from local native plant experts/enthusiasts about native wildflowers that they have observed along the loop.

Results

We identified 30 sites: Enhance – 16*; View only – 3; New planting site – 7*; Do not develop – 4. [*Summer and/or fall survey results could alter our recommendations.]

Details about each site are documented starting on page 5. Some specific conclusions that we wanted to highlight are as follows:

- A1A south of St. Augustine Beach was the portion of the loop with the greatest potential for showy wildflower displays based on existing native wildflowers. *Gaillardia pulchella*, *Mimosa strigillosa*, and *Helianthus debilis* were widespread along this entire segment. Of some concern is the *Gaillardia aristata* that has been planted along some portions of A1A. We suggest that the extent of this species be determined (see Notes, Sites 15 and 18).

- Species suggested as suitable for a site does not imply that all species listed should be planted at that site. The species selected for each site should be based on design principles, management considerations, flowering season, and availability of ecologically appropriate seeds or containerized plants. When purchasing seeds or plants, always base the purchase on scientific name, and always inquire as to the original source of seeds or plants (that is, the county and state). County and state information can be used to determine the ecoregion in which seeds or stocks plants were collected. We recommend that seeds or plants purchased be derived from plant material that originated in appropriate ecoregions. For more information about ecoregions, see the U.S. EPA ecoregion maps at http://www.epa.gov/wed/pages/ecoregions.htm.

- Off-road paved sites – Along much of the paved portions we noted a 3 to 5-ft strip along each side that is mowed for safety purposes. Sites where the mowed strip is bordered by subcanopy (shrubs/tall weeds) or trees are not suitable for native wildflowers, except possibly *Mimosa strigillosa*. This issue will need to be considered when paving other off-road portions of the loop.

- We recommend that the Merritt Island National Wildlife Refuge portion of the trail that we followed remain part of the loop. Those currently responsible for managing roadside vegetation appear to have used appropriate practices to manage native wildflower and grass populations.

- *Imperata cylindrica* was widespread, especially along some of the railroad beds. This could be a significant problem when developing future segments of the trail as much of the undeveloped trail is former railroad bed.

And finally, we suggest that the Foundation consider a summer survey. We concur that summer is not typically thought of as a major native wildflower bloom season. However, a summer survey would be part of a complete picture of existing wildflower sites, new planting sites, and sites not to be developed. Moreover, spring, summer, and fall site information would result in a more efficient management plan to be developed for existing and new planting sites.

Attachments

- ESRI-compliant shape files (easily imported into any standard GIS platform)
  - Site data; species data
  - Datum – WGS84; projection file (*.pri) included with each shape file suite

- Excel spreadsheet of site information

Site

Number	1
Type	New planting
Location	Lake Beresford Park; south trail
Size	Triangular-shaped site; ~150-200 ft^2
Lat./long.	+28.9890427 -81.3382286
Habitat	Palm/oak hammock

Species Suggestions

Showy	*Asclepias tuberosa*, *Berlandiera subacaulis*, *Carphephorus corymbosus*, *Chamaecrista fasciculata*, *Eragrostis spectabilis*, *Erythrina herbacea*, *Gaillardia pulchella*, *Liatris gracilis*, *Mimosa strigillosa*, *Penstemon multiflorus*, *Pityopsis graminifolia*, *Ruellia caroliniensis*, *Salvia coccinea*, *Salvia lyrata*, *Sorghastrum secundum*, *Tradescantia ohiensis*
Notes	If *Gaillardia* is included use sparingly as it is aggressive.

Site

Number	2
Type	New planting
Location	Lake Beresford Park; south trail
Size	~60-70 ft x ~6-8 ft
Lat./long.	+28.9782531 -81.3324005
Habitat	Palm/oak hammock

Species Suggestions

Showy	*Asclepias tuberosa*, *Berlandiera subacaulis*, *Carphephorus corymbosus*, *Chamaecrista fasciculata*, *Eragrostis spectabilis*, *Erythrina herbacea*, *Gaillardia pulchella*, *Liatris gracilis*, *Mimosa strigillosa*, *Penstemon multiflorus*, *Pityopsis graminifolia*, *Ruellia caroliniensis*, *Salvia coccinea*, *Salvia lyrata*, *Sorghastrum secundum*, *Tradescantia ohiensis*
Notes	If *Gaillardia* is included use sparingly as it is aggressive.

Site

Number	3
Type	Enhancement
Location	Gemini Springs trail
Size	~50 ft x 10 ft
Lat./long.	+28.8493045 -81.3149724
Habitat	Ruderal

Species

Showy	*Mimosa strigillosa*
Other	*Phyla nodiflora* (inset) – growing along edge of pavement

Management recommendation

Use management practices that will facilitate preservation and expansion of *Mimosa* and *Phyla*.

Site

Number	4
Type	New planting
Location	Grand Ave. (Deland)
Size	~0.8 mile; ~6-8 ft wide strip between paved trail and Grand Ave.
Lat./long.	North end: +29.0493553 -81.3527317 South end: +29.0377669 -81.3528801
Habitat	Ruderal

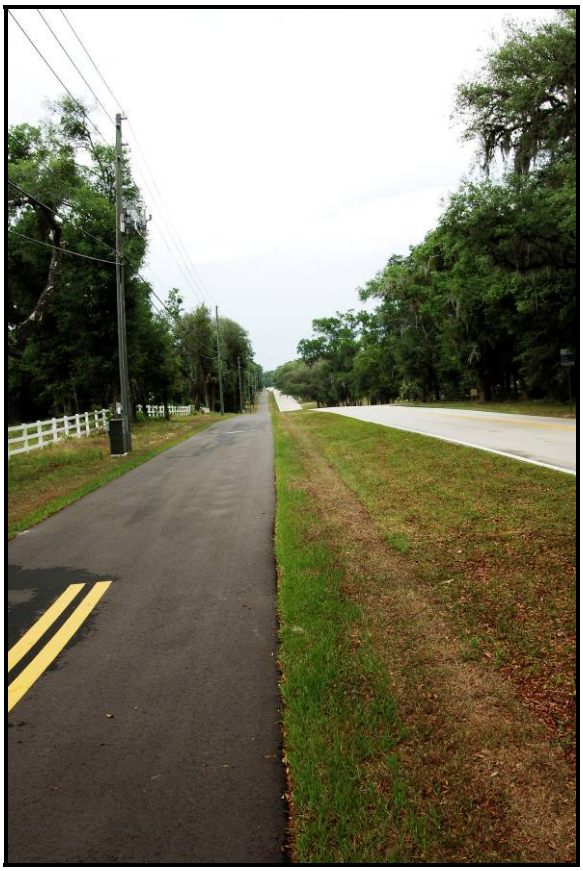
South end

Species Suggestions

Showy	*Asclepias tuberosa*, *Berlandiera subacaulis*, *Carphephorus corymbosus*, *Eragrostis spectabilis*, *Erythrina herbacea*, *Gaillardia pulchella*, *Liatris gracilis*, *Mimosa strigillosa*, *Penstemon multiflorus*, *Phlox drummondii*, *Pityopsis graminifolia*, *Ruellia caroliniensis*, *Salvia coccinea*, *Salvia lyrata*, *Sorghastrum secundum*, *Tradescantia ohiensis*
Notes	Some very small populations of *Phlox drummondii* occur along the 0.8-mile stretch. If using *Gaillardia*, restrict it to one end or the other as it is aggressive.

Site

Number	5
Type	New planting
Location	Grand Ave. – Highland Park Road to Glenwood community
Size	~0.7 miles x ~6-8 ft wide strip between paved trail and Grand Ave.
Lat./long.	North end: +29.0657055 -81.3526516 South end: +29.0560300 -81.3527868
Habitat	Ruderal



Species Suggestions

Showy	*Asclepias tuberosa*, *Berlandiera subacaulis*, *Carphephorus corymbosus*, *Eragrostis spectabilis*, *Erythrina herbacea*, *Gaillardia pulchella*, *Liatris gracilis*, *Mimosa strigillosa*, *Penstemon multiflorus*, *Phlox drummondii*, *Pityopsis graminifolia*, *Ruellia caroliniensis*, *Salvia coccinea*, *Salvia lyrata*, *Sorghastrum secundum*, *Tradescantia ohiensis*
Notes	Some very small populations of *Phyla nodiflora* occur along this stretch. If using *Gaillardia*, restrict it to one end or the other as it is aggressive.

Site

Number	6
Type	Do not develop
Location	CR 3 (Volusia); east side
Size	North of Deleon Springs State Park to bridge (bridge label = 0749092)
Lat./long.	+29.1481159 -81.3720951
Habitat	Ruderal

Species

Invasive	*Imperata cylindrica*

Recommendation

Avoid

Site

Number	7
Type	Enhancement
Location	SR 17; west side
Size	~450 ft x 10 ft
Lat./long.	+29.2060596 -81.4458952
Habitat	Ruderal

Species

Showy	*Phlox drummondii* (probably naturally occurring)

Management recommendation

Use management practices that will facilitate preservation and expansion of *Phlox*.

Site

Number	8
Type	Enhancement
Location	SR 17, west side; just south of Volusia CR 305 (just south of Volusia Co. Fire Services Sta. No. 43)
Size	~250-300 ft x 8-10 ft
Lat./long.	+29.3132006 -81.4914059
Habitat	Ruderal

Species

Showy	*Phlox drummondii* (probably naturally occurring); occasional *Tradescantia ohiensis* immediately adjacent to railroad

Management recommendation

Use management practices that will facilitate preservation and expansion of *Phlox* .and *Tradescantia*

Site

Number	9
Type	Enhancement
Location	SR 17, west side; between railroad bed and SR 17
Size	~0.15 miles x 15 ft
Lat./long.	+29.3582715 -81.5049970
Habitat	Ruderal

Species

Showy	*Phlox drummondii* (probably naturally occurring); occasional *Salvia lyrata* (naturally occurring)
Other	*Phyla nodiflora* (naturally occurring) along edge of pavement

Management recommendation

Use management practices that will facilitate preservation and expansion of *Phlox*, *Salvia*, and *Phyla*

Site

Number	10
Type	Enhancement
Location	SR 17, west side; Pomona Park; between sidewalk and SR 17
Size	1.7 miles (starting at Cow Catcher Lounge) x 8-20 ft
Lat./long.	North end: +29.5194147 -81.6231980 South end: +29.5027245 -81.6015027
Habitat	Ruderal

Species

Showy	Mixed population comprised mainly of *Gaillardia pulchella*, *Phlox drummondii*, *Coreopsis basalis*, and *Tradescantia* sp. (probably *T. ohiensis*), with occasional *Asclepias tuberosa*
Notes	Species (except *Tradescantia*) and extent suggest these species might have been planted.

Management recommendation

Use management practices that will facilitate preservation and expansion of this mixed population.

Site

Number	11
Type	Do not develop
Location	SR 17, west side; between railroad bed and SR 17
Size	~0.1 mile x 10-15 ft
Lat./long.	+29.5375371 -81.6461525
Habitat	Ruderal

Species

Showy	Mainly *Phlox drummondii* (probably naturally occurring) and *Lygodesmia aphylla* (naturally occurring); occasional naturally occurring *Berlandiera subacaulis* and *Tradescantia ohiensis*
Invasive	*Imperata cylindrica* along railroad bed

Management recommendation

Take no action to preserve or enhance the native wildflower species at this site.

- This wildflower site could decline due to proximity of *Imperata cylindrica.*
- Developing into, or managing as, a wildflower site would be cost prohibitive

Site

Number	12
Type	Do not develop
Location	SR 7, east side; just south of SR 100
Size	~750 ft x 15-20 ft
Lat./long.	+29.6032669 -81.5878450
Habitat	Ruderal

Species

Showy	*Phlox drummondii* (probably naturally occurring)
Invasive	*Imperata cylindrica*

Management recommendation

Take no action to preserve or enhance the *Phlox* at this site.

- This wildflower site could decline due to proximity of *Imperata cylindrica.*
- Developing into, or managing as, a wildflower site would be cost prohibitive.

Site

Number	13
Type	Enhancement
Location	A1A, just north of Palmetto Road in St. Aug. Beach (5495 A1A South, Saint Augustine, FL 32080)
Size	~300 ft x 60 ft
Lat./long.	+29.7931431 -81.2618107
Habitat	Ruderal

Species

Showy	All are naturally occurring: *Acmella oppositifolia*, *Cirsium* sp., *Campanula floridana*, *Coreopsis leavenworthii*, *Erigeron quercifolius*, *Gaillardia pulchella*, *Pyrrhopappus carolinianus*, *Rhynchospora colorata*, *Sagittaria lancifolia*, *Salvia lyrata*, *Spiranthes vernalis* (variable forms), *Tradescantia* sp.
Others	*Gaura angustifolia*, *Phyla nodiflora*, *Ptilimnium capillaceum*, *Tephrosia* sp.
Notes	This site is composed of moist and dry portions, and is occupied by showy native species typical of such habitats. **This site has the potential to be a "primo" wildflower site in terms of diversity**.

Management recommendation

Use management practices that will facilitate preservation and expansion of these species. Must consider *Tephrosia* sp., which occurs on drier part of site, as this native vine could be very competitive from late spring and into fall and overgrow other wildflowers.

Site

Number	14
Type	Enhancement
Location	A1A, west side; back slope adjacent to upscale development
Size	Plants scattered over ~0.1 mile x 15-20 ft
Lat./long.	+29.6907490 -81.2237886
Habitat	Ruderal

Species

Showy	*Gaillardia pulchella* and *Helianthus debilis*; both probably naturally occurring

Management recommendation

Use management practices that will facilitate preservation and expansion of *Gaillardia* and *Helianthus*. Enhance with seeding of these species.

Site

Number	15
Type	Enhancement
Location	A1A; St. John's, Flagler County line at Marineland
Size	0.5 acres
Lat./long.	+29.6714816 -81.2142258
Habitat	Ruderal

Species

Showy	*Gaillardia* spp. – probably a mix of *G. aristata* and naturally occurring *G. pulchella*; *Helianthus debilis* (planted); *Borrichia frutescens* (inset; naturally occurring)
Notes	Planted 1-4-2008; FWF Planting Grant P-02607 "A1A Scenic and Historic Coastal Byway". In addition to *G. aristata*, seed mix included *Coreopsis basalis*, *Coreopsis lanceolata*, *Rudbeckia hirta*, *Rudbeckia mollis*, *Solidago canadensis*, *Solidago stricta*, *Dalea pinnata*, *Ipomopsis rubra*, and *Phlox drummondii* (none, except possibly *G. aristata*, were observed)

Management recommendation

The extent of *G. aristata* should be determined. While native and found in the western and northern U.S., *G. aristata* is not native to the southeastern U.S. nor has it been reported to naturalize in the southeastern U.S. We are not aware of *G. aristata*'s salt tolerance (*G. pulchella* is salt tolerant); low salt tolerance likely will reduce *G. aristata*'s sustainability. It's possible that *G. aristata* will or has hybridized with *G. pulchella* (both are parents of *G*. x *grandiflora*, a common cultivar).

Monitor through October to determine extent of other sown species; *R. hirta* and *C. lanceolata* probably are not sustainable. Use management practices to facilitate preservation and expansion of all but *G. aristata*. Reseed/replant in fall 2009 as needed.

Site

Number	16
Type	Enhancement
Location	Parking lot and adjacent land; east side of A1A, just south of Marineland
Size	~1-1.5 acres
Lat./long.	+29.6674501 -81.2126573
Habitat	Ruderal along A1A; back dune on areas adjacent to parking lot

Species

Showy	*Gaillardia pulchella* and *Helianthus debilis* (probably naturally occurring)

Management recommendation

Use management practices that will facilitate preservation and expansion of *Gaillardia* and *Helianthus*; enhance populations of these species by reseeding. Enhance site with containerized plants of *Borrichia frutescens.*

Site

Number	17
Type	Enhancement
Location	A1A, just south of Site 16
Size	~150 ft x 60 ft
Lat./long.	+29.6654219 -81.2121027
Habitat	Ruderal

Species

Showy	*Mimosa strigillosa* (naturally occurring) and *Gaillardia pulchella* (rare; probably naturally occurring)

Management recommendation

Use management practices that will facilitate preservation and expansion of *Mimosa* and *Gaillardia*.

Site

Number	18
Type	Enhancement
Location	A1A; median adjacent to Villages of Matanzas Shores
Size	1 mile
Lat./long.	+29.6514264 -81.2071652
Habitat	Ruderal

Species

Showy	*Gaillardia* spp. – probably a mix of *G. aristata* and naturally occurring *G. pulchella*; *Helianthus debilis* (naturally occurring)
Others	*Phyla nodiflora* (naturally occurring)
Notes	Planted 1-2-2008; FWF Planting Grant P-02607 "A1A Scenic and Historic Coastal Byway". In addition to *G. aristata*, seed mix included *Coreopsis lanceolata*, *Rudbeckia hirta* and *Phlox drummondii* (no *Coreopsis*, *Rudbeckia*, or *Phlox* were observed)

Management recommendation

The extent of *G. aristata* should be determined. While native and found in the western and northern U.S., *G. aristata* is not native to the southeastern U.S. nor has it been reported to naturalize in the southeastern U.S. We are not aware of *G. aristata*'s salt tolerance (*G. pulchella* is salt tolerant); low salt tolerance likely will reduce *G. aristata*'s sustainability. It's possible that *G. aristata* will or has hybridized with *G. pulchella* (both are parents of *G*. x *grandiflora*, a common cultivar).

Additional seeds of *Coreopsis lanceolata* or *Rudbeckia hirta* should not be planted as these species probably are not sustainable under the environmental conditions of this site. And while *P. drummondii* from Florida might be sustainable in this median, we recommend that any reseeding or replanting in this median be with species that commonly occur along A1A in this part of Florida such as *G. pulchella*, *H. debilis*, and *Mimosa strigillosa*.

Site

Number	19
Type	Enhancement
Location	A1A, west side; beyond mow zone; just north of Varn Road
Size	~1 mile x 10-20 ft
Lat./long.	+29.5585312 -81.1663778
Habitat	Ruderal

Species

Showy	*Gaillardia pulchella* and *Helianthus debilis* (both probably naturally occurring)

Management recommendation

Use management practices that will facilitate preservation and expansion of *Gaillardia* and *Helianthus*.

Site

Number	20
Type	Enhancement
Location	A1A, west side; just north of High Point Road; ~02.5-0.5 miles north of lat./long. point below
Size	Long stretch (ft not estimated) that is 8-10 ft wide between bike path and A1A
Lat./long.	+29.4109122 -81.0952388
Habitat	Ruderal

Species

Showy	*Gaillardia pulchella*, *Helianthus debilis*, and *Mimosa strigillosa* (all probably naturally occurring)

Management recommendation

Use management practices that will facilitate preservation and expansion of *Gaillardia*, *Helianthus*, and *Mimosa*.

Site

Number	21
Type	Enhancement
Location	Mango Street (Edgewater); east side
Size	~1000 ft^2
Lat./long.	+28.9832401 -80.9140451
Habitat	Ruderal

Species

Showy	*Mimosa strigillosa* (naturally occurring)

Management recommendation

Use management practices that will facilitate preservation and expansion of *Mimosa*.

Site

Number	22
Type	New planting
Location	Mango Street (Edgewater); east side; just south of Site 21
Size	~0.75 mile x 10-15 ft
Lat./long.	+28.9808088 -80.9128999
Habitat	Ruderal

Species Suggestions

Showy	*Asclepias tuberosa*, *Berlandiera subacaulis*, *Carphephorus corymbosus*, *Eragrostis spectabilis*, *Erythrina herbacea*, *Gaillardia pulchella*, *Liatris gracilis*, *Mimosa strigillosa*, *Penstemon multiflorus*, *Phlox drummondii*, *Pityopsis graminifolia*, *Ruellia caroliniensis*, *Salvia coccinea*, *Salvia lyrata*, *Sorghastrum secundum*, *Tradescantia ohiensis*; *Coreopsis leavenworthii* in swale
Notes	Some *Phyla nodiflora* adjacent to roadside. If *Gaillardia* is included use sparingly as it is aggressive.

Site

Number	23
Type	New planting
Location	US 1 median; starting just north of City Hall in Oak Hill City
Size	~1.7 mile long; swale plus 3 ft on each side of swale
Lat./long.	+28.8531338 -80.8490036
Habitat	Ruderal

Species Suggestions

Showy	*Coreopsis leavenworthii*

Site

Number	24
Type	View only
Location	SR 3; Merritt Island National Wildlife Refuge
Size	300+ ft x 5 ft
Lat./long.	+28.8135998 -80.8342371
Habitat	Mesic coastal flatwoods

Species

Showy	*Rhynchospora colorata* with occasional *Coreopsis leavenworthii* and *Sagittaria lancifolia* (all naturally occurring)

Management recommendation

Take no action to preserve or enhance species at this site as it is managed by the Refuge.

Site

Number	25
Type	View only
Location	SR 3; south of haulover drawbridge; both sides; Merritt Island National Wildlife Refuge
Size	Plants scattered over ~0.5 acres
Lat./long.	+28.7230614 -80.7431905
Habitat	Ruderal

Species

Showy	*Gaillardia pulchella* and occasional *Berlandiera subacaulis* (both naturally occurring); *Passiflora incarnata* (inset; naturally occurring; rare)

Management recommendation

Take no action to preserve or enhance species at this site as it is managed by the Refuge.

Site

Number	26
Type	View only
Location	SR 3; Merritt Island National Wildlife Refuge
Size	~0.3 miles x 5-8 ft (swale)
Lat./long.	+28.6479033 -80.6995344
Habitat	Ruderal

Species

Showy	*Coreopsis leavenworthii* (all naturally occurring); *Polygala rugelii* (occasional; naturally occurring)

Management recommendation

Take no action to preserve or enhance this wildflower site as it is managed by the Refuge.

Site

Number	27
Type	New planting
Location	US 1; Titusville, vicinity of Malinda Lane
Size	N/A
Lat./long.	+28.6224270 -80.8214574
Habitat	Ruderal; mainly upland

Species Suggestions

Showy *Asclepias tuberosa*, *Berlandiera subacaulis*, *Carphephorus corymbosus*, *Chamaecrista fasciculata*, *Chrysopsis subulata, Eragrostis spectabilis*, *Erythrina herbacea*, *Gaillardia pulchella*, *Helianthus debilis*, *Liatris gracilis*, *Liatris tenuifolia*, *Mimosa strigillosa*, *Monarda punctata*, *Muhlenbergia capillaris, Penstemon multiflorus*, *Pityopsis graminifolia*, *Ruellia caroliniensis*, *Salvia coccinea*, *Salvia lyrata*, *Solidago sempervirens*, *Sorghastrum secundum*, *Tradescantia ohiensis*

Notes This site is part of the future bike trail. The southern end of this trail is near Malinda Lane (see lat./long.) The picture above is near Parker Ave; it is typical of sites that could be planted with native wildflowers. If *Gaillardia* is included use sparingly as it is aggressive.

Areas that are immediately bordered by subcanopy are not suitable for planting wildflowers. Also, avoid planting wildflowers in areas immediately adjacent to residences.

Site

Number	28
Type	New planting
Location	Folsom Road; Titusville; starting at lat./long. point below and proceeding north (see also Notes)
Size	~0.7 miles x 8-10 ft
Lat./long.	+28.6790687 -80.8554262
Habitat	Ruderal

Species Suggestions

Showy	*Phlox drummondii*
Notes	Site width – starts ~3 ft from the old railroad bed (future bike trail) to the edge of the roadside

Site

Number	29
Type	Do not develop (at least temporarily)
Location	Old railroad bed and future bike trail ; Titusville to Maytown
Size	N/A
Lat./long.	+28.7170085 -80.8794339
Habitat	Ruderal

Species Suggestions

Notes

At this time, no portion of this section of the old railroad bed and future bike trial is suitable for establishing wildflowers as the subcanopy is too close to the trail. We also looked at this the old railroad bed at Aurantia Road and Blount Ridge Road and reached the same conclusion.

There is substantial occurrence of nonnative, invasive species (including (*Lantana camara* and *Schinus terebinthifolia*), which will need to be removed. After removal of nonnative, invasive species, the suitability of wildflowers on this portion of the trail can be re-examined.

Site

Number	30
Type	New planting
Location	Old railroad bed and future trail adjacent to Maytown Road (Volusia)
Size	N/A
Lat./long.	+28.8204851 -80.9963111
Habitat	Disturbed uplands

Species Suggestions

Showy	*Asclepias tuberosa*, *Berlandiera subacaulis*, *Carphephorus corymbosus*, *Chamaecrista fasciculata*, *Eragrostis spectabilis*, *Erythrina herbacea*, *Gaillardia pulchella*, *Liatris gracilis*, *Mimosa strigillosa*, *Penstemon multiflorus*, *Pityopsis graminifolia*, *Ruellia caroliniensis*, *Salvia coccinea*, *Salvia lyrata*, *Sorghastrum secundum*, *Tradescantia ohiensis*.
Notes	Much of the railroad bed along Maytown Road is behind barbed wire fence. We were cautioned about unresolved property rights issues. If *Gaillardia* is included use it sparingly as it is aggressive.

Table 1. Scientific of common names of species mentioned in this report. The common names are those listed by the Atlas of Florida Vascular Plants (http://florida.plantatlas.usf.edu/) as of June 5, 2009. Other common names are listed in parentheses. When purchasing seeds or plants, **always** request a plant by its scientific name. Form: WF = wildflower; GR = Grass; SG = Sedge; SH=Shrub

Species	Form	Common Name (s)
		Native Species
Acmella oppositifolia	WF	Oppositeleaf Spotflower
Asclepias tuberosa	WF	Butterfly Milkweed; Butterflyweed
Berlandiera subacaulis	WF	Florida Greeneyes
Borrichia frutescens	WF	Bushy Seaside Oxeye
Campanula floridana	WF	Florida Bellflower
Carphephorus corymbosus	WF	Coastalplain Chaffhead; Florida Paintbrush
Chamaecrista fasciculata	WF	Partridge Pea
Cirsium sp.	WF	Thistle
Coreopsis lanceolata	WF	Lanceleaf Tickseed (Lanceleaf Coreopsis)
Coreopsis leavenworthii	WF	Leavenworth's Tickseed (Leavenworth's Coreopsis)
Dalea pinnata	WF	Summer Farewell
Eragrostis spectabilis	GR	Purple Lovegrass
Erigeron quercifolius	WF	Oakleaf Fleabane
Erythrina herbacea	WF	Coralbean; Cherokee Bean
Gaillardia aristata	WF	(Common Gaillardia)*
Gaillardia pulchella	WF	Firewheel (Indian Blanket; Blanketflower)
Gaura angustifolia	WF	Southern Beeblossom
Helianthus debilis	WF	East Coast Dune Sunflower (East Coast Beach Sunflower)
Ipomopsis rubra	WF	Standing Cypress; Spanish Larkspur
Liatris gracilis	WF	Slender Gayfeather (Slender Blazing Star)
Liatris tenuifolia	WF	Shortleaf Gayfeather (Shortleaf Blazing Star)
Lygodesmia aphylla	WF	Rose-Rush
Mimosa strigillosa	WF	Powderpuff

Monarda punctata	WF	Spotted Beebalm
Muhlenbergia capillaris	GR	Hairawn Muhly (Purple Muhlygrass)
Passiflora incarnata	WF	Purple Passionflower
Penstemon multiflorus	WF	Manyflower Beardtongue
Phlox drummondii	WF	Annual Phlox (Drummond's Phlox)
Phyla nodiflora	WF	Turkey Tangle Frogfruit; Capeweed (Frogfruit)
Pityopsis graminifolia	WF	Narrowleaf Silkgrass
Polygala rugelii	WF	Yellow Milkwort
Ptilimnium capillaceum	WF	Mock Bishopweed; Herbwilliam
Pyrrhopappus carolinianus	WF	Carolina Desertchicory (Carolina False Dandelion)
Rhynchospora colorata	SG	Starrush Whitetop
Rudbeckia hirta	WF	Blackeyed Susan
Rudbeckia mollis	WF	Softhair Coneflower
Ruellia caroliniensis	WF	Carolina Wild Petunia (Wild Petunia)
Sagittaria lancifolia	WF	Bulltongue Arrowhead (Duck Potato)
Salvia coccinea	WF	Tropical Sage; Blood Sage
Salvia lyrata	WF	Lyreleaf Sage
Solidago canadensis	WF	Canada Goldenrod
Solidago sempervirens	WF	Seaside Goldenrod
Solidago stricta	WF	Wand Goldenrod
Sorghastrum secundum	GR	Lopsided Indiangrass
Spiranthes vernalis	WF	Spring Ladiestresses
Tephrosia sp.	WF	Hoarypea
Tradescantia ohiensis	WF	Ohio Spiderwort; Bluejacket
Tradescantia sp.	WF	Spiderwort

Nonnative, Invasive Species

Imperata cylindrica	GR	Cogongrass
Lantana camara	SH	Lantana; Shrubverbena
Schinus terebinthifolia	SH	Brazilian Pepper

Appendix – Anecdotal Observations

Information provided by local native plant experts/enthusiasts about native wildflowers that they have observed along the loop, or in the vicinity of the loop was limited. We expect that some people will respond over the next several weeks. That information can be incorporated into the fall survey report, or a summer survey report (if funded).

The anecdotal observations below are direct quotes so as to avoid any misinterpretation. Observation 1 was slightly edited for format only. Nonessential parts of emails were deleted from Observations 2 to 5.

AnecObs1

Wild Flower Notes for the loop Bike ride of Central Florida

Preliminary note – In Palatka (Rt. 20) is Ravine Gardens State Park which is a bike ride through native and imported flowering plants and trees of Florida It hosts native wild azaleas', Florida dogwood, magnolias, and Palatka hollies in a deepening craves of a natural spring feed ravine.

Start at the cross from PUTNAM County (Rt. 20 and 207) into SAINT JOHN'S County – The county line is active farm country, quickly you are in the small town of Hastings at the first traffic light is where County rd 13 joins Rt. 20 within a mile County Rd 206 peals off 90 degrees to the right. You are now in Spuds. State Rd 207 will veer to the right at a northern angle and County Rd 13 will go straight. *In this complex maze of roads, you can note that the rode sides close to the farms, have a sprinkling of COREOPSIS (yellow flat daisy flower with a yellow center), Indian Blanket-Blanket Flower* GAILLARDIA, and *SUN FLOWERS (* yellow daisy flower with a dark brown center). It is approximately 12 miles to you cross I-95 from the entrance of Saint Johns' County.

Pickerel (no blooms at this time), were in the swales East and West of I-95. This is a summer to early fall blue flower bloomer and found in a wet area. Gaillardia was in the divided island and very evident in all color ranges. Plants move to find areas that they prefer to grow in as apposed to areas where they were planted. The Gaillardia (Blanket Flower) has moved to heavy scattered areas in the grass lining the road way especially on the South side now of State Rd.207. This is a heavy traffic area and it is easier to note the bright heads of the Indian Blanket Flower in the grass lined road side.

You will be passing Palm Freddie's Nursery. Then there is a beautiful array of Southern Magnolias across from Target. Along the roadway on the South side are several clumps of Wild Carrots or Queen -Anne's Lace. Now you are in "The new Business district" of Saint Augustine and about to make a left onto US 1. On the right you are passing Oyster Bay Marina entering Saint Augustine and turning right at the light or East onto County Road 214 or King Street. On the left side of King St is Flagler College (Rest Rooms are in the Student center off Sevilla St and in the main building of the College.) The campus gardens were planted by Mr. Flagler for his hotel and are now maintained by the college.

You will be able to notice the large Kumquat tree in front of the library as you ride down King. In front of the Zorayda castle is a planting of IPOMOEA (sweet potato vine). The fore lawn of the Lightner Museum is a formal dwarf box holly "English Garden". Coontie Palms are in front of the Coronado Hotel; they are a low dwarf palm with a cone center. In the small court of the Trinity Episcopal Church is a grouping of sward fern. (The church has one, maybe two, windows designed by Louis Comfort Tiffany, a friend of Mr. Flagler).

At the end of King Street is a large center island park housing the "old Slave Auction Pavilion". The park contains Indian hawthorn, Phttoisposum, African Iris, sego palms, Queen palm, Resurrection fern (Polypodium polypodioides) at base and on the live oaks, Spanish Moss (Tillandsia usneoides)[a bromeliad] also on the live oaks, Sable Palm, liropee, (both green and variegated), Two citrus trees (one a honey bell orange), Red Cedar, Box Holly, East Palatka Holly, Azaleas', String Lilies. In potted cement planters were Coontie with large yellow raised cones (Zamia) crotons, sweet potato vines, Impatients, Ti plants, Arrowheads, Hibiscus, Nendenia, Split Leaf Philodendron, Indian Backbone (Devils backbone), Verbena and Black Elephant Ear. Across from the park in the hanging baskets of the Galleria del Mar is Asparagus Fern.

You now pick up A1A in crossing the Matanzas River and The Saint Augustine inlet to the sea. One block down Anastasia Boulevard, you will be passing OSteins' on the right (West) and the plantings of Nearly Wild Roses. Leonard's Nursery is on the left or east side of A1A. The Alligator Farm is on the right and then you will be passing the St Augustine's Amphitheater followed shortly by the Southern Horticulture Nursery. Now at the large traffic light intersection of State Roar 312 and A1A, you should turn left or due East, (there is a road that veers to the left before the light, that also can be used.) You are now riding through the southern edge of Anastasia State Park. The woodlands on the right (South) contain Wax myrtle, Live Oak(Quercus viriniana var. geminate) and dwarf live oak (Quercus virginina var. minima), Bamboo, Scrub Palmetto (Sabal etonia), Red Cedars, Cabbage Palm (Sabal palmentto), Muscatine vines and a whole managed section [cut or shorten stems] of Cherokee Bean (Erythrina herbacea). In the grass road bed were more Blanket flowers (Gaillardia) and in the watery swell were Pickerel and Rose gentians (Gentian) [attractive flowers, petals are bright rose edges to white core, on a tall graceful stem with the small symmetrical, opposite leaves that by the top of the stalk have no stems]. Before you round the corner to turn South, you can see the tall Sea oats (Uniola paniculata) on the left at the height of the sand dunes.

Continuing on is the Saint Johns' County Pier, to the left and at the entrance are Seagrapes (Coccoloba uvifera), leaves round and leathery, currently small bush plants. There are rest room facilities here. Continue down "Old A1A/Beach Blvd until you con to a traffic light and turn left (south) onto A1A. A median will now divide North and South traffic in the median are junipers, yellow lantana, Blanket flowers. Along the planted condo complexes are Oleander (Nerium oleander), String lilies and Cycads. The divided high way ends and there is a period of bush lined highway containing Wax myrtles, red cedars, Live oaks and for color Blanket flower.

There is a traffic light at A1A and the junction of 206, Crescent Beach. To the south side of the light is a police Station and a access road to the beach. You can access

Crescent Park from this road. Turn in front of The Sunset Grill. The park offers rest room facilities, water, and covered picnic facilities. There is easy access to the beach with Sea oats, Railroad vine(Iponmoea pea-caparae)[pink morning glory like flower], Sea purslane (Sesuvium portulacastrum) and some mounds of Beach tea (Croton punctatus) along with Blanket flowers, Beach sunflowers (Helianthus debilis) and dollar weed. Proceeding down A1A, you will reach Fort Matanzas National Monument on the right (West). The park also offers rest room facilities and there is a park ranger that can arrange a tour of the local fauna that is kept free from invading non-native foliage. Tree borings of the large Live Oak in the picnic area dates the tree to about 150 years. Muscatine vine, Live oaks, Red cedars, Oleanders. Palmettos, Wax myrtles, Resurrection fern, Spanish moss and Red bays are part of the offerings. On the Ocean side of Fort Matanzas are yuccas and thistles. Back on A1A you will now come to the parking lot on the north-west side of the bridge that crosses the Matanzas's Inlet waterway at the entrance way road side are several Passionflower vines (Passiflora spp), Virginia creeper, White Daisy flower, Queen-Anne's lace and Wild Lupine (Lupinus perennis).

Rejoining A1A going South, look up to the right over the houses stands a tall Australian Pine (a different needle formation on the branches) this is one of the non natives that the park service is removing from their land. Continuing South will lead you to Flagler County, where just North of Marineland are sea oats on the height of the sand dunes on the East or Ocean side. There are rest room facilities at the gift shop on the left side and main entrance to the aquarium.

AnecObs2

…near St. Augustine on Hwy 312, just east of the bridge going to Anastasia Island. I have seen gallardia growing in the median.

AnecObs3

…there are wildflowers blooming on State Road 312 in St. Augustine, FL. These were planted in the median by FDOT.

AnecObs4

I have always been concerned about this stand of flowers as it is the only stand I am aware of in St. Johns County. Even though it is not directly on the trail, many bicyclists use ICW (Nine Mile Road) as a regular route (down US 1, across IGW, Right on 16, and north on 13, back to the city- or north from St. Augustine, across IGW, and left on 16 , back to St. A)). Of course, it is not time for them to bloom yet as they bloom in the fall and do not open until 4 PM. I thought if I mentioned them in advance, maybe you could fit them into your schedule. The Celestial Lily is named in the Florida Natural Areas Inventory.

The stand is located along both sides of International Golf Parkway, west of US 1 and East of the Scenic Roadway sign at the east end of Twelve Mile Swamp. The Road and Bridge Department is aware of where they are located and stop mowing the right of way at the end of July….

AnecObs5

A friend of ours showed us some fantastic photos that she had taken of one of her grandchildren in some stunning fields of blooming flowers in Deland some time ago. The memory of it clicked when I got your email. I doubt the site has blooms now but it might worth noting to check out for the next season. I believe that they were Black-eyed susan.

I have not myself visited the sight so all I have is the following directions to the fields from our friend: The Road is Stone between Plymouth and Hwy 92, down the street from the hospital and just passed the nursing homes. From what I understand there are some areas of Deland traveled by bicyclist so I hope this is helpful.